REMARKS

Claims 1-13 are all the claims pending in the application. Claim 1 stands presently rejected under 35 U.S.C. § 102(b) as being anticipated by Turner (US Patent No. 4,905,249). In addition, claims 1 and 7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Macken (US Patent No. 4,897,848). Furthermore, claims 2-3 and 8-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Turner, and claims 4-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Turner in view of Holcombe (US Patent No. 4,261,753). Finally, the drawings are objected to. By this Amendment, Applicant amends claim 1.

Claim Count

As an initial matter, Applicants note that all the claims pending in the application are claims 1-13, and not claims 1-15, as indicated in the present Office Action. The application transmittal sheet filed on March 30, 2001, erroneously states that the application as filed contains claims 1-15. However, the application as filed contains claims 1-13 only. There were no other claims added during prosecution of the present application. Applicants apologize for this claim count ambiguity.

The Objection to the Drawings

Regarding the objection to the drawings stated on page 2 of the present Office Action, Applicants have labeled Figs. 13, 14, and 15 as "Prior Art". Thus, Applicants respectfully

request withdrawal of the objection to the drawings. A "Request for Approval of Proposed Drawing Corrections" is enclosed.

The Rejection of Claim 1 under 35 U.S.C. § 102(b) in view of Turner

Fig. 1 of the Turner reference shows a carbon dioxide laser 12, a catalytic converter 14, and a heat exchanger 16. Therein, the catalytic converter 14 includes a conduit 20 having ends 20a and 20b respectively coupled to conduits 18a and 18b. The central portion of the conduit 20 is provided with an annular recess 20c, which is filled with a catalyst 20 and covered with a wire mesh 24. The mesh 24 can be coextensive with the inner wall of the conduit 20 as shown in Fig. 1, or extend inward of the inner wall as shown in Fig. 2.[1]

However, there is no teaching or suggestion in the Turner reference that "an optical catalyst layer" is "formed on the inner wall of said box", wherein the "box" is arranged "for storing said laser oscillation means", as recited in claim 1. As clearly evidenced by Fig. 1 of the reference, Turner's catalyst 20 is arranged within the annular recess 20c. The annular recess 20c, however, is not a structure that stores laser oscillation means, as required by claim 1. More specifically, the Examiner equates the laser 12 with the claimed "laser oscillation means". The annular recess 20c, however, does not store the laser 12, as shown in Fig. 1. Thus, the annular recess 20c can not be equated with the box as claimed in claim 1.

[1] See Turner reference, col. 1, ln. 60, to col. 2, ln. 20

For at least these reasons, Applicants submit that claim 1 is patentable over the Turner reference.

The Rejection of Claims 1 and 7 under 35 U.S.C. § 102(b) in view of Macken

Fig. 1 of the Macken reference shows a CO_2 laser 20A having a cathode 21A and an anode 22A, which are connected to a source of electrical power (not shown). The laser 20A has an inner tube 23A surrounded by an outer tube 24. Mirrors 27 and 28 are positioned at the end of tube 23A. When electrical power is applied to the electrodes 21A and 22A, a discharge 29A is formed through the tube 23A. Clean precious metal is distributed on the inside wall of the tube 23A.[2] Therein, the precious metal coating can catalytically alter the chemical composition of the gas in the discharge.[3]

However, the Macken reference nowhere teaches or suggests "an optical catalyst layer formed on the inner wall of said box, at a location where ultraviolet rays generated by said discharge are exposed", as recited in amended claim 1.

For at least these reasons, Applicants submit that claim 1 is patentable over the Macken reference.

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[2] See Macken reference, col. 2, ln. 18-38; ln. 52-56

[3] See Macken reference, col. 1, ln. 63-66

Independent claim 7 recites "a recess portion arranged in said box for receiving ultraviolet rays generated by said laser oscillation means, and for reflecting said ultraviolet rays so that the reflected light passes through said discharge space between said pair of discharge electrodes". The Examiner points to the "Summary of Invention" section of the Macken reference to support the allegation that this limitation of claim 7 is disclosed. However, nowhere in the "Summary of Invention" section, nor in any other part of the reference, nor in the Figures is there a "recess" as claimed taught or suggested. In fact, the Examiner states in only general and conclusory manner ("see entire document, especially Summary of Invention col. 1-2") that the reference allegedly teaches or suggests the claimed "recess" limitation. No citation to a specific location is provided as to where in the reference the "recess" limitation as claimed is allegedly disclosed.

For at least these reasons, Applicants submit that independent claims 1 and 7 are patentable over the Macken reference.

In Macken, the catalyst layer is formed on a discharge tube, which confines the discharge space. Further, in Macken, since the catalyst is composed of conductive precious metals such as gold, it is necessary to carefully consider the arrangement of the catalyst in the discharge neighborhood (in Macken, the precious metal is configured into segments, which do not interfere with the electrical discharge).

On the other hand, in the present invention, since the optical catalyst is not formed on a discharge part area, it is easily possible to use a conductive material.

Macken uses precious metals; on the other hand, the present invention uses a TiO_2 or Alumite processing layer. Therefore, the present invention has the advantage that the catalyst can be composed of insulated metals.

Further, Macken uses a CO laser and a precious metal which has the effect of increasing CO_2. On the other hand, it is an object of the present invention to absorb ultraviolet rays and to prevent a scattering of ultraviolet rays. In addition, the present invention can effectively use an occurring catalysis by absorbing ultraviolet rays.

The Rejection of Claims 2 and 9 under 35 U.S.C. § 103(a) in view of Turner

Regarding independent claim 2, the Examiner alleges that Turner discloses all the limitations of claim 2 except the "plate member" limitation. However, as discussed above in connection with the rejection of claim 1 under 35 U.S.C. § 102(b) in view of Turner, the Turner reference does not teach or suggest at least the "box" limitation recited in claim 2. Thus, regardless of whether or not it would have been obvious to modify the Turner reference so as to incorporate the "plate member" limitation into Turner's system, not all of the limitations of claim 2 are taught or suggested.

For at least these reasons, Applicants submit that independent claim 2 is patentable over the Turner reference.

Analogously, regarding independent claim 9, there is no teaching or suggestion in the Turner reference of at least "a box for storing said laser oscillation means, said cooling means and said collector". Rather, as clearly evidenced by Fig. 1 of the reference, the various structures

of Turner's system are connected by conduits 18a, 18b, and 18c. Thus, regardless of whether or not it would have been obvious to modify the Turner reference so as to incorporate the "removing hydrogen fluoride from said laser gas" limitation into Turner's system, not all of the limitations of claims 9 are taught or suggested.

For at least these reasons, Applicants submit that independent claim 9 is patentable over the Turner reference.

The Rejection of Claims 4 and 5 under 35 U.S.C. § 103(a) in view of Turner and Holecombe

Regarding independent claims 4 and 5, the Examiner alleges that Turner teaches all the limitations of these claims except for the "graphitized layer" limitation. However, as discussed above in connection with the rejection of claim 1 under 35 U.S.C. § 102(b) in view of Turner, the Turner reference does not teach or suggest at least the "box" limitation recited in claims 4 and 5. Thus, regardless of whether or not it would have been obvious to combine the teachings of the Turner reference and the Holcombe reference so as to incorporate the "graphitized layer" limitation into Turner's system, not all of the limitations of claims 4 and 5 are taught or suggested.

For at least these reasons, Applicants submit that independent claims 4 and 5 are patentable over the Turner and Holcombe references, whether considered individually or in combination.

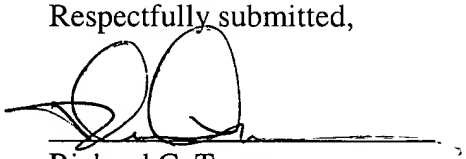
The dependent claims are patentable at least by virtue of dependency from their respective independent claims.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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WASHINGTON OFFICE

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PATENT TRADEMARK OFFICE

Date: April 29, 2003

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. A laser oscillator comprising:

laser oscillation means for employing a discharge to excite a laser and to generate a laser beam;

a box for storing said laser oscillation means; and

an optical catalyst layer formed on the inner wall of said box~~.~~, at a location where ultraviolet rays generated by said discharge are exposed.